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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,456	11/26/2003	Paul R. Sharps	1002	5958

7590 02/22/2005

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EXAMINER

DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/723,456

Applicant(s)

SHARPS ET AL.

Examiner

Alan Diamond

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004 and 03 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 48-98 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 48-98 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Comments***

1. The objection to the drawings has been overcome by Applicant's amendment to the specification.
2. The objection to the disclosure for informalities has been overcome by Applicant's amendment thereof.
3. The 35 USC 102(b) and 35 USC 103(a) rejections based on Hilgarth are moot in view of Applicant's cancellation of claims 33-47 and presentation of new claims 48-98. In Hilgarth, the bypass diode (28) is integral with the multijunction solar cell in Figures 8 and 9, but is not integral with a subcell of the solar cell.

### ***Specification***

4. It is noted that application Serial No. 10/280,593 has been allowed. Applicant should insert the parent number for said parent application on page 1 of the specification after said parent application issues as a patent.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 96 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had

possession of the claimed invention. In claim 96, at line 2, limitation that the at least one layer of the first solar cell and the bypass diode are "substantially simultaneously" formed in the same process is not supported by the specification, as originally filed.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 55-59, 62-64, and 96 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 55 is indefinite because "said epitaxially grown diode" at line 1 lacks positive antecedent support in claim 52.

Claim 56 is indefinite because "the bypass diode" at line 1 lacks positive antecedent support in claim 52. The same applies to dependent claims 58, 59, and 63.

Claim 57 is indefinite because it is not clear which cell is being referred to by the term "said cell" at line 4. Accordingly, it is not clear which base is being referred to by the term "the base of said cell" at line 4. The same applies to dependent claims 58 and 59.

Claim 59 is indefinite because "the first solar cell" at line 2 lacks positive antecedent support in claim 56.

Claim 62 is indefinite because "said first portion and said second portion" at line 1 lack positive antecedent support in claim 60.

Claim 63 is indefinite because "said first solar cell grown" at line 1 lacks positive antecedent support in claim 59.

Claim 64 is indefinite because "said epitaxially grown diode" at line 1 lacks positive antecedent support in claim 62.

In claim 96, at line 2, the term "substantially simultaneously" is indefinite because it is subjective.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 48-66, 68-70, 72, 73, 75-78, 80, 84, 86-90, and 92-98 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 9-64397, herein referred to as JP '397.

As seen in Figure 2, JP '397 teaches a solar cell module comprising a multijunction solar cell (201) including first (204A,205A,206A) and second (204B,205B,206B) solar cells on a substrate (203); and bypass diode (202) that is integral to the first solar cell by way of common layer (205A), wherein said bypass diode reads on the instant means integral to a portion of the first solar cell for passing current when the multijunction solar cell is shaded (see also paragraphs 0031, 0036, and 0041-0043). As seen in Figure 2, the multijunction solar cell (201) is formed on a first portion of the substrate (203) and the bypass diode (202) is formed next to the multijunction solar cell (201) on a second portion of the substrate (203). The diode (202) and the

multijunction solar cell (201) share layers (205A) and (204B) that are epitaxially grown in the same process (see paragraph 0042). As seen in Figure 2, the diode (202) is connected across the first and second solar cells to protect the cells from reverse biasing (see also paragraph 0036). The diode (202) can have a Schottky contact (see paragraph 0055). The substrate (203) can be glass coated with a metal or ITO coating (see paragraph 0066), and said metal or ITO coating then reads on the instant lateral conduction layer. Since JP '397 teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

11. Claims 48-66, 68-70, 72, 73-78, 80, 84-90, and 92-98 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor, GB 2346010 A. See Figures 1c and 1d and pages 5-6 of Taylor, which set forth the features of the instant solar cell semiconductor device. Since Taylor teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

12. Claims 48-59 and 65-92 are rejected under 35 U.S.C. 102(b) as being anticipated by Ho et al, WO 99/62125. See Figure 14B which has the instant multijunction solar cell with Ge substrate, and GaAs (1412,1414,1416) and GaInP (1422,1424,1426) solar cells, and integral bypass diode (1410) that is integral with a portion of the GaAs solar cell and laterally spaced therefrom. Since Ho et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 48-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor, GB 2346010 A, in view of Marvin et al, "Evaluation of multijunction solar cell performance in radiation environments, Conference Record of the 28<sup>th</sup> Photovoltaic Specialists Conference, pages 1102-1105, published 15-22 September 2000, and Lillington et al, U.S. Patent 5,853,497.

See Figures 1c and 1d and pages 5-6 of Taylor, which set forth the features of the instant solar cell semiconductor device. Taylor teaches that its substrate (1) can be GaAs (see page 5, line 4). Taylor does not specifically teach that its substrate (1) can be Ge, and that its solar cell (5) is GaAs and its solar cell (2) is InGaP. Marvin et al teaches the conventional GaInP/GaAs/Ge two junction device wherein the Ge is the substrate (see the entire document). Lillington et al is relied upon for showing what is well-known in the art, i.e., that GaInP/GaAs can be grown on either a GaAs substrate or a Ge substrate (see col. 1, line 65 through col. 2, line 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a Ge substrate in Taylor's multijunction solar cell in place of the GaAs exemplified by Taylor, and to have used GaInP and GaAs for Taylor's solar cells because GaInP/GaAs can be grown on either a GaAs substrate or a Ge substrate as shown by Lillington et al, and because the GaInP/GaAs/Ge two junction device wherein the Ge is the substrate is conventional in the art, as shown by Marvin et al.

15. Claims 48-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al, WO 99/62125.

See Figure 14B which has the instant multijunction solar cell with Ge substrate, and GaAs (1412,1414,1416) and GaInP (1422,1424,1426) solar cells, and integral bypass diode (1410) that is integral with a portion of the GaAs solar cell and laterally spaced therefrom. Ho et al's electrical interconnector C-clamp (1442) corresponds to the metal layer in independent claims 60 and 93. When the C-clamp is connected to front metal (1440) it will be a layer on said (1440). Likewise, when the C-clamp is connected to the back metal (1430), it will be a layer on said (1430). Indeed, Ho et al's Figure 11 shows how the C-clamp (1102) provides for a layer on front metal (702) and a layer on back metal (802). Ho et al teaches the limitations of the instant claims other than the difference which is discussed below.

Ho et al does not specifically teach that said electrical interconnector C-clamp is metal. However, in the absence of anything unexpected, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used metal for Ho et al's electrical interconnector C-clamp because said C-clamp is electrically conductive. Ho et al's metal C-clamp 1442 is a layer in metal layer in the device since it forms layers on said front metal 1440 and said back metal 1430.

### ***Double Patenting***

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 48-98 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-35 of U.S. Patent No.

6,680,432. Although the conflicting claims are not identical, they are not patentably distinct from each other because the additional required third photovoltaic subcell is not excluded from the instant claims.

18. Claims 48-98 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No.

6,278,054. Although the conflicting claims are not identical, they are not patentably distinct from each other because the multijunction solar cell in the claims of said patent have the instant solar cells and diode.

19. Claims 48-98 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-27 of U.S. Patent No.

6,600,100. Although the conflicting claims are not identical, they are not patentably distinct from each other because the multijunction solar cell in the claims of said patent have the instant solar cells and diode.

20. Claims 48-98 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21-30 of

compending Application No. 10/336,247. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of said compending application have the instant at least one multijunction solar cell and bypass diode.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

21. Claims 48-98 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2-36 of compending Application No. 10/280,593. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of said compending application have the instant at least one multijunction solar cell and bypass diode.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

22. Claims 48-98 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 37-73 and 68-111 of compending Application No. 10/773,343. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of said compending application have the instant at least one multijunction solar cell and bypass diode.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Response to Arguments***

23. Applicant's arguments filed October 4, 2004 and December 3, 2004 have been fully considered but they are not persuasive.

Applicant argues that claim 48 recites a multijunction solar cell and means for passing current that is integral to a portion of the first subcell, and that in Figure 1 of JP '397 the diode 102 has a completely different sequence of layers which do not align with the layers of the cell 101. Applicant argues that since there is no correspondence between any of the layers of the solar cell and diode, the diode 102 is not integral to any portion of the first, or any of the other subcells, of the solar cell 101. However, this argument is not deemed to be persuasive because, for example, Figure 2 of JP '397 is more pertinent than Figure 1. In particular, the bypass diode 202 in said Figure 2 is integral with the first subcell in said Figure 2 by way of common semiconductor layer 205A and is integral with the second subcell in said Figure 2 by way of common semiconductor layer 204B. Thus, JP '397 is also anticipatory with respect to claims 52, 57, 60, and 65 since the bypass diode 202 in JP '398's Figure 2 is integral with the subcells in the device.

Applicant argues that new claim 68 recites a "discontinuous lateral conduction layer" and claim 88 recites "... a lateral conduction layer deposited on said substrate ... and forming a contact region...". Applicant notes that the Examiner has pointed out that substrate 203 of JP '397 can be coated with a metal (paragraph 0066) and reads on the "lateral conduction layer" of original claim 44. Applicant argues that there is nothing in such paragraph that suggest that such coating would perform any electrical function, or form a contact region for the bypass diode. Applicant argues that paragraph 0067

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suggests that the conductive coating is for improving reflectivity. However, Applicant's arguments are not well taken and are not deemed to be persuasive. Paragraph 0066 of JP '397 discusses the electrically conductive substrate of JP '397's solar cell. The substrate can be stainless steel or aluminum, but can also be glass (i.e., an electrical insulator) coated with metal or transparent conductive oxide. In JP '397's Figure 2, the conductive substrate does indeed perform an electrical function, and is a lower electrode. The upper electrode is layers 207, 208. The electrically conductive substrate in JP '397's device clearly provides electrical connection between the solar cell 201 and bypass diode 202. It is true that when the electrically conductive coating on the glass is a metal, such as Ag, Cu, etc, the metal can be reflective. However, this does not take away from the fact that this electrically conductive layer, which provides the electrical conductivity to the substrate particularly when glass is used, performs an electrical function in the device.

Applicant cites page 5, line 13, of Taylor and argues that the protective diode of Taylor does not appear to be electrically connected to the multijunction solar cell. Applicant argues that Taylor recites that the contacts are added so that external connection may be made to the cell and the protection diode. Applicant argues that if the diode of Taylor were integral to the cell, an external connection to the diode would appear to be unnecessary. Applicant's arguments are not deemed to be persuasive because Taylor's diode 11 is most certainly integral with solar cell 5 of the multijunction solar cell because it shares a common layer with solar cell 5 (see Figures 1c and 1d). The trench formed in Taylor's Figure 1C does not completely electrically isolate the

protective diode form the solar cell. The protective diode 11 and solar cell 5 share layer 7, which is electrically conductive and thus, the protective diode 11 and solar cell 5 are electrically connected (see Figures 1a and 1c; and page 5, lines 15-16). If Taylor's protective diode was not electrically connected to the multijunction solar cell, then the protective diode would not have any function in the device. What is being referred to at page 5, line 13, of Taylor are the provision of electrical contacts so that external connections can be made. For example, see Figure 4a where several multijunction solar cells, each with a protective diode, are externally connected in series.

With respect to claim 48, Applicant argues that in Ho et al's Figure 14A, the first photoactive junction is formed from layers 1402 and 1404. Applicant argues that the diode layers 1412-1420 lie over the layers of the first subcell, so the diode is not "integral to ... said first subcell". However, this argument is not deemed to be persuasive because, unless said claim 48 recites some further structure as to where the "first subcell" is located, then the first subcell in claim 48 can be any of the subcells in the multijunction solar cell. Ho et al's GaAs subcell comprises layers 1412 to 1416, and the protective bypass diode 1410 is integral with this subcell. The protective bypass diode 1410 reads on the instant means for passing current when the multijunction solar cell is shaded (in Ho et al, see page 1, lines 17-21; and page 8, line 8). The tunnel diode (the two layers marked "Tunnel Diode" that overlie the GaAs subcell) is not the bypass protective diode and does not correspond to said means for passing current.

With respect to Ho et al, Applicant argues that claim 52 recites a "bottom subcell" and "means integral to ... said bottom subcell". However, this argument is not deemed

to be persuasive because said GaAs subcell (layers 1412 to 1416) is “a bottom subcell” that is clearly formed on germanium substrate 1402. Said GaAs subcell is “a bottom subcell” because it is the solar cell at the bottom of the stack of layers including layers 1412 to 1432, which are formed on the Ge substrate.

Applicant argues that claim 57 recites a bypass diode integral to and directly connected to the base of the first solar cell, and that Ho et al is not directly connected to the base layer. However, this argument is not deemed to be persuasive because claim 57 recites “a bypass diode integral to a portion of said first solar cell and electrically connected to the base of said cell ...”. In Ho et al’s Figure 14B, said GaAs subcell (layers 1412 to 1416) is integral with the bypass diode (1410). As noted above, the term “said cell” is indefinite, and thus, it is not clear exactly what base of what cell is being referred to. In any event, the bypass diode (1410) is electrically connected to the base (1412) of the GaAs subcell, and is electrically connected to the back metal (1430) as well as to the Ge substrate (1402). The recitation “electrically connected” in claim 57 does not require direct electrical connection.

With respect to claim 60, Applicant argues that Ho et al’s C-clamp 1442 is not a metal layer, and that metal layer 1440 does not have one end coupled to the base of the first solar cell. However, this argument is not deemed to be persuasive because said C-clamp 1442 is a metal layer. Indeed, as noted above, when the C-clamp is connected to front metal 1440, there will be a layer on said 1440. Likewise, when the C-clamp is connected to the back metal 1430, there will be a layer on said (1430). Ho et al’s Figure 11 shows how the C-clamp 1102 provides for a layer on front metal 702 and a layer on

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back metal 802. Ho et al's metal C-clamp 1442 is a metal layer in the device since it forms layers on said front metal 1440 and said back metal 1430.

Applicant argues that the lateral conduction layer in claims 68-92 is not anticipated by any structure in Ho et al. However, this argument is not deemed to be persuasive because GaAs Base/Buffer N layer 1412 reads on the lateral conduction layer in independent claims 68 and 77. Layers 1412, 1406, 1408, and/or 1430 read on the highly conductive lateral conduction layer in independent claim 88.

Applicant argues that the "metal layer" of claims 93-98 are not anticipated by any structure in Ho et al. However, this argument is not deemed to be persuasive because said metal C-clamp 1442 encompasses the metal layer in claim 93. As noted above, with respect to claim 60, when the C-clamp is connected to from metal 1440, there will be a layer on said 1440. This metal layer is on the substrate 1402 and over the region that is laterally spaced from the GaAs and GaInP subcells. Said C-clamp electrically shorts as here claimed enabling a bypass diode (1410) to be formed.

With respect to Taylor in view of Marvin et al, Applicant argues that the teaching in Marvin et al pertaining to Ge substrates or GaInP/GaAs solar cells do not pertain to features of connecting a multijunction solar cell to an integral bypass diode, or to the other features as set forth in the present claims. However, this argument is not deemed to be persuasive because Taylor teaches connecting a multijunction solar cell to an integral bypass diode as in the instant invention.

### ***Conclusion***

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond  
Primary Examiner  
Art Unit 1753

Alan Diamond  
February 18, 2005

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized flourish at the end.